<<   >>

<<   >>

13   ISBN   9787040272628

10   ISBN   7040272628

       2009-7

                                    (2009-07   )

     327

                        PDF

             http://www.tushu007.com

Physics IS a science to research the basic structure the basic modus of motion as well as Law of interaction of matters It is a subject formed in the process that human has been exploring nature In the first physics was developed from the research to the law of the motion in mechanics later on it researched to the law of thermo phenomenon the law of electromagnetic phenomenon optical phenomenon as well as radiation Until the end of 1 9th century physics had formed already a whole system itself called classical physics In the first thirty years of 20th century physics experienced a great revolution that brought the naissance of theory of relativity and quantum mechanics Modern physics was founded here from Physics is the basic of nature sciences In the progress of exploring the matter structure and basic law of motion each important discovery and breakthrough brought the development of new fields and new direction even the foundation of new branch of the subject the cross subject and the subject of new technology In the past 100 years a mass of subject separated out from physics such as mechanics calorifics optics and acoustics Therein to laser radio microele C tronics atomic energyare already the independent subjects now Although physics is an age-old foundational subject the knowledge learned in the time of university are almost all discoveries found one or two hundred years before even three or four hundred years before——it has important and inseparable relationship with the life of human being and the development of science and technology today and even in the further Shenzhou airship roaming in the airspace drilling petroleum underground exploring the cosmic arcanum in immense out space making the micro-electronic chips in computer all these depends on the foundational effect of physics Even on the field that seems to be looked having no relation with physics in the past such as economy finance stock and police some people are making research by physical way now and achieved the success getting on peopleis recognition In 2000 20 greatest items of engineering in 20th century were chosen by American Academy of Engineering most technologies adopted therein to get relation directly or indirectly with discoveries on the field of physics in the past 300 years These 20 items engineering are listed firstly with electrization automobile airplane tap water system micro-electronics radio and TV next with mechanization Of farming computer telephone air-conditioning and refrigerator highway satellite internet photography then with home electric devices medical technology petroleum and petrochemistry laser and fiber nuclear technology high performance material The year of 2005 is'International Physics Year' named by UN This was the first time to name an international year with the name of a single subject in UN history

On the base of Physics Fourih Edition the revision of Lhis hook is made consulting The Basic Reqirirement of Teachin g UniversityPhysics Course for/Von-physical Major in Uaiversity of.Sciernce & Errgineerrng Discussion Draf't and constituted lasdy by sub-commitLee of physics essential lecture teaching guidance for non-physics spcciahy F ducation DeparLment. What in the bookcontains all of kernels required in the basic requiremem moreover a certain amount of extension content is presemed as well as fordifferent majors.ln the revision thia book keepa specialtiea such aa logical system well-situaLed profundity and extension propercapacity wide flexibility cominS from the original vision of the book. Meanwhile.il adds more contente in following aspects modernphysics.the annoLation with modern viewpoints for classic physica and the effects Lo science and technology from the achievements ofmodern phyeyics. Th18 book has two volumes. In Volume it contains mechanics and elecctomagnetic. And in Volume it contains oscillation and undulation optics theory of molecular dynamics and basic of thermodynamics theary of relativily.quantum physics. There are hooks The Applications of Physical Principle in Engineering and Technology Third Edition

The Analysis and Solution for Exercises In Physics Fifth EdiLion Cuidance Jor Learning Physics Fifth Edition and the muhimedia The Electronic Teaching PLan for Physics Fifth Fdition to form a complete set with this book. This book can be the teaching material of the higher education for non-physical major in universiLy of sciences and engineering. It can also be selected as texts by the relevant fields of social sciences and natural sciences and read by social readers at large.

Chapter 1 The Kinematics of Mass Points 1-1 The Description of the Motion of Mass Points 1. Reference frames,mass point 2. Position vector,equation of motion and displacement 3. Velocity 4. Accelerations 1-2 Motion in a Circle 1. Planar polar coordinate system 2. Angular velocity of the circular motion 3. Tangential and normal acceleration of circular motion,angular acceleration 4. Circular motion with constant speed and circular motion with constant variation rate of speed 1-3 Relative Motion 1. Time and space 2. Relative motion QUESTIONS EXERCISES Chapter 2 Newton's Laws 2-1 Newton's Laws 1. Newton's first law 2. Newton's second law 3. Newton's third law 4. Relativity principle of force 2-2 Units and Dimensions of Physical Quantities 2-3 Some Forces often Seen 1. The gravitational force 2. Elastic force 3. Friction force 2-4 Examples of the Applications of the Newton's Law 2-5 Non-inertial Reference Frames,Inertial Forces QUESTIONS EXERCISES Chapter 3 The Laws of Momentum Conservation and Energy Conservation 3-1 Momentum Theorem of a Mass Point and the Mass Point System 1. Impulse,momentum theorem of a mass point 2. Theorem of momentum of the object system 3-2 The Law of Momentum Conservation 3-3 The Mass Transport Problem within a System 3-4 The Theorem of Kinetic Energy 1. Work 2. The theorem of kinetic energy of a particle 3-5 Conservation Force,Non-conservation Force and Potential Energy 1. The features of the work done by universal gravitational force and the elastic force 2. Conservation forces and non-conservation forces,the mathematical expression of the work done by conservation force 3.P otentialenergy 4. Potential curve 3-6 The Principle of Work-energy and the Law of the Conservation of Mechanical Energy 1. The theorem of kinetic energy of a system of particles 2. The theorem of work-energy of the system of particles 3. The law of conservation of mechanical energy 4. The universal speeds 3-7 Complete Elastic Collisions,Complete Inelastic Collisions 3-8 The Law of Energy Conservation 3-9 Center of Mass,the Law of Mass Center Motion 1. Center of mass 2. The law of motion of center of mass 3-10 Symmetry and Conservative Law 1. Symmetry 2. Conservation law and the symmetry QUESTIONS EXERCISES Chapter 4 Rotation of Rigid Body 4-1 The Rotation of a Rigid Body about a Fixed Axis 1. The angular velocity and angular acceleration of a rotating rigid body 2. Formula of fixed axis rotation with constant angular acceleration 3. The relationship between angular quantities and linear quantities 4-2 Torque,the Law of Rotation,Moment of Inertia 1. Torque 2. The law of rotation 3. The moment of inertia 4. The theorem of parallel axes 4-3 Angular Momentum,the Law of Angular Momentum Conservation 1. The theorem of angular momentum and the law of the conservation of the angular momentum of mass points 2. The theorem of angular momentum and the principle of conservation of angular momentum of a rigid body rotating about a fixed axis 4-4 Work Done by a Torque,the Theorem of Kinetic Energy of a Rigid Body Rotating about a Fixed Axis 1. Work done by a torque 2. The power of a torque 3. The kinetic energy of rotation 4. The theorem of kinetic energy of a rigid body rotating about a fixed axis 4-5 The Translation of a Rigid Body on a Plane 4-6 The Precession of Rigid Body 4-7 The Newtonian Proposition of the Universal Gravitational Force 1. The calculation of gravitation between objects 2. Proving elliptical orbit 4-8 The Successes and Limitations of Classical Mechanics 1. Classical mechanics is only applicable for low speed motions,not for high speed motions 2. Determinism and randomness 3. The continuity and quantization of energy QUESTIONS EXERCISES Chapter 5 The Static Electric Field 5-1 The Quantization of the Electric Charge and the Charge Conservation Law 1. The quantization of the electric charge,the charge conservation law 2. The charge conservation law 5-2 The Coulomb's Law 5-3 The Electric Field Intensity 1. Statistic electric field 2. The electric field intensity 3. The electric field intensity of a point charge 4. The superposition principle of electric field intensities 5. The electric field intensity of the electric dipole 5-4 The Flux of Electric Fields,the Gauss Theorem 1. Electric field line 2. The flux of electric field intensity 3. Gauss theorem 4. Examples of applications of Gauss theorem 5-5 Milikan's Experiment of the Electron Charge Determination 5-6 The Circuital Theorem of Static Electric Field,Electric Potential Energy 1. Work done by static electric field force 2. Circuital theorem of a static electric field 3. Electric potential energy 5-7 The Electric Potential 1. The electric potential 2. The electric potential of point charge electric fields 3. The superposition principle of electric potentials 5-8 Electric Field Intensity and Electric Potential Gradient 1. Equipotential surface 2. The electric field intensity and the electric potential gradient 5-9 The Electric Dipole in a Static Electric Field 1. The

orientation effect of an external electric field on the torque of an electric dipole 2. The electric potential energy and the equilibrium position of an electric dipole in an electric field QUESTIONS EXERCISES Chapter 6 Conductors and Dielectrics in Static Electric Fields 6-1 Conductors in Static Electric Fields 1. Electrostatic induction and condition of electrostatic equilibrium 2. The charge distribution of a conductor at electrostatic equilibrium 3. Electrostatic screening 6-2 Dielectrics in Static Electric Field 1. The influence of dielectric on electric capacity, the relative permittivity 2. The polarization of dielectric 3. The intensity of polarization 4. The relationship between polarized charges and free charges 6-3 Electric Displacement, the Gauss Theorem at the Presence of the Dielectric 6-4 Capacity, Condenser 1. The capacity of an isolated conductor 2. Condenser 3. The series connection and parallel connection of condensers 6-5 Energy of Static Electric Fields, Energy Density 1. The electric energy of the condenser 2. The energy of the static electric field, energy density 6-6 The Charge and Discharge of the Condensers 1. Charging a condenser 2. Discharging a condenser 6-7 Applications of Electrostatics 1. Van der Graaff generator 2. Electrostatic removal of dusts 3. Electrostatic separation QUESTIONS EXERCISES …… Chapter 7 The Steady Magnetic Field Chapter 8 The Electromagnetic Induction, the Electromagnetic Field Appendix 1 Vectors Appendix 2 The Legitimate Metric Units of China and the International System of Units SI Appendix 3 Some Common Data of Air, Water, the Earth and the Solar System Answers for Exercises in Part

Page 6

The chaos phenomena in nature are ubiquitous,there are many more examples in addition to the above ones given. For example, the pendulum motion for a given length of the swing follows Newton's equations of motion,but its period often oscillates due to some accidental factors. Some even say that the humcane of the Mexican Gulf is perhaps due to a flap of the wings of a butterfly. Although chaos was brought out in the 60's of the 20th century,the research subjects have grown far beyond those physics,chaos has been shown to exist in biology,cosmology,social sciences and other areas of study. 3. The continuity and quantization of energy Classical mechanics was summarized from the study of mechanical motions of macroscopic objects with v

<< >>

PDF

:http://www.tushu007.com